

Claims

What is claimed is

1. A method, comprising:

5 using a first partial polarization beam splitter
to split by reflection a fraction of light in one of first
and second mutually orthogonal polarization directions from
an input beam to produce a first monitor beam;

 using a second partial polarization beam splitter
10 to split by reflection a fraction of said light in said one
of said first and second mutually orthogonal polarization
directions from said input beam to produce a second monitor
beam, wherein said first and second partial polarization
beam splitters are oriented to have their polarization axes
15 to be 90 degrees with each other;

 converting said first and said second monitor
beams into first, and second detector signals,
respectively; and

 using a difference between said first and said
20 second detector signals to indicate an amount and a
direction of a deviation in a polarization of said light
from a known direction.

2. The method as in claim 1, further comprising using
a third partial polarization beam splitter to split by
reflection a fraction of said light in said one of said
first and second mutually orthogonal polarization
5 directions from said input beam to produce a third monitor
beam, wherein said third partial polarization beam splitter
is oriented between polarization axes of said first and
second partial polarization beam splitters at 45 degrees.

10 3. The method as in claim 2, further comprising using
said third monitor beam to resolve an ambiguity in the
input polarization.

4. The method as in claim 1, further comprising
15 producing a normalized differential signal by dividing said
difference by a sum of said first and said second detector
signals to eliminate a dependence of said difference on a
power level of said input beam.

20 5. The method as in claim 1, further comprising
controlling polarization of said input light according to
said difference by controlling a polarization controller
disposed in said input beam.

6. The method as in claim 1, further comprising using
a third partial polarization beam splitter downstream of
said first and said second partial polarization beam
splitters to split by reflection a fraction of said light
5 in said one of said first and second mutually orthogonal
polarization directions from said input beam to produce a
third monitor beam, wherein said third partial polarization
beam splitter is oriented to have a polarization axis to be
at 45 degrees with respect to said first and second partial
10 polarization beam splitters.

7. The method as in claim 6, further comprising:
placing a polarization controlling device before said
first, said second, and said third partial polarization
15 beam splitters to control polarization of light in response
to said first, said second, and said third monitor beams.

8. The method as in claim 7, further comprising using
a difference between the power levels of said first and
20 said second monitor beams as part of feedback to control
the polarization controlling device.

9. A device, comprising:
an optical path through which light propagates;

a first partial polarization beam splitter in said optical path to split by reflection a fraction of the light in one of first and second mutually orthogonal polarization directions from an input beam to produce a first monitor
5 beam;

a second partial polarization beam splitter in said optical path to split by reflection a fraction of said light in said one of said first and second mutually orthogonal polarization directions from said input beam to
10 produce a second monitor beam, wherein said first and second partial polarization beam splitters are oriented to have their polarization axes to be 90 degrees with each other;

first and second optical detectors to respectively
15 convert said first and said second monitor beams into first, and second detector signals, respectively; and

a circuit to receive said first and said second detector signals and to produce a difference between said first and said second detector signals to indicate an
20 amount and a direction of a deviation in a polarization of said light from a known direction.

10. The device as in claim 9, further comprising a third partial polarization beam splitter located downstream

of said first and said second partial polarization beam
splitters in said optical path, said third partial
polarization beam splitter operable to split by reflection
a fraction of said light in said one of said first and
5 second mutually orthogonal polarization directions from
said input beam to produce a third monitor beam, wherein
said third partial polarization beam splitter is oriented
to have a polarization axis to be at 45 degrees with
respect to said first and second partial polarization beam
10 splitters.

11. The device as in claim 10, further comprising a
polarization controlling device before said first, said
second, and said third partial polarization beam splitters
15 to control polarization of light in response to said first,
said second, and said third monitor beams.

12. The device as in claim 11, wherein said circuit
produces a sum signal of power levels of said first and
20 said second monitor beams, and wherein said polarization
controlling device responds to the difference between said
first and said second detector signals, the sum signal, and
the power level of said third monitor beam to control
polarization of light.